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REMARKS

Status of the Claims

Claims 2-37 and 39 are pending in this application. Claim 38 has been canceled. No claims have been added. The claims have been amended to change the word "face(s)" to "surface(s)". No new matter has been added by the above claim amendments.

Rejection under 35 USC 112, second paragraph

The Examiner rejects claims 2-39 as indefinite for reciting the term "face(s)". Applicants amend the claims to delete the term "face" and replaced it with "surface(s)". As such, the rejection should be withdrawn.

Rejections under 35 USC 103(a)

The Examiner rejects claims 2-39 as obvious over Shartle et al. USP 5,230,866 (Shartle '866), Columbus USP 4,426,451 (Columbus '451), Subramanian USP 5,223,219 (Subramanian '219), Bochner USP 5,800,785 (Bochner '785), Livingston USP 5,922,593 (Livingston '593) or Cottingham USP 5,948,673 (Cottingham '673). Applicants traverse the rejection and respectfully request the withdrawal thereof.

Applicants submit that the present invention is patentable over the cited references. The present invention is directed to a

reaction chamber with surfaces arranged so that a fluid sample can flow through the reaction chamber by capillary force.

Shartle '866 and Columbus '451 each disclose a fluidic system with capillary stops capable of passing fluid with the application of pressure. Shartle '866 and Columbus '451 fail to disclose or suggest all the elements of the present invention including a sample receiving chamber, a specific reaction chamber with the recited configuration and specific channels. Moreover, neither Shartle '866 nor Columbus '451 discloses nor suggests a reaction chamber where the fluid sample is able to pass through the reaction chambers by capillary action alone without an outside force, such as pressure.

Subramanian '219 discloses a diagnostic system with a housing that has an analytical cartridge that has a transporting capillary to lead liquid to the reading site that has porous matrices for reading the liquid. Subramanian '219 fails to disclose or suggest all the elements of the present invention including a sample receiving chamber, a specific reaction chamber with the recited configuration and specific channels.

Bochner '785 discloses a closed housing with a large number of test wells. The test wells are filled by a gas venting system. Bochner '785 fails to disclose or suggest all the elements of the present invention including a sample receiving chamber, a specific reaction chamber with the recited configuration and specific

channels. Moreover, Bochner '785 fails to disclose or suggest a reaction chamber where the fluid sample is able to pass through the chambers by capillary action alone without an outside force, such as pressure.

Livingston '593 discloses a test panel with a plurality of test wells. The liquid sample passes through fill ports to the wells. The liquid is moved by the force of gravity. Livingston '593 fails to disclose or suggest all the elements of the present invention including a sample receiving chamber, a specific reaction chamber with the recited configuration and specific channels. Moreover, Livingston '593 fails to disclose or suggest a reaction chamber where the fluid sample is able to pass through the reaction chambers by capillary action alone without an outside force, such as gravity.

Cottingham '673 discloses an assay device with a variety of wells. The wells are filled with the liquid samples by a combination of hydrostatic and capillary force. Cottingham '673 fails to disclose or suggest all the elements of the present invention including a sample receiving chamber, a specific reaction chamber with the recited configuration and specific channels. Moreover, Cottingham '673 fails to disclose or suggest a reaction chamber where the fluid sample is able to pass through the reaction chambers by capillary action alone without an outside force, such as gravity or hydrostatic pressure.

Applicants submit that the Examiner has failed to make a prima facie case of obviousness. Pursuant to MPEP 2143 and In re Vaeck, in order for a prior art reference to render the present invention obvious, each and every element of the claimed invention must be disclosed or suggested by some teaching to modify the reference to arrive at the present invention. Applicants submit that none of the cited references discloses or suggests all the elements of the claimed invention and there is no teaching to modify the disclosures of the references to arrive at the present invention. As such, Applicants respectfully request that the rejection be withdrawn.

Conclusion

As Applicants have addressed and overcome all rejections in the Office Action, Applicants respectfully request that the rejections be withdrawn and that the claims be allowed.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Kecia Reynolds (Reg. No. 47,021) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Attached hereto is a marked-up version of the changes made to the application by this Amendment.

Pursuant to the provisions of 37 C.F.R. § 1.17 and 1.136(a), Applicants hereby petition for an extension of one (1) month to November 22, 2002 for the period in which to file a response to the outstanding Office Action. The required fee of $55.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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MSW/KJR/jao
0179-0164P

Attachment: Version with Markings to Show Changes Made

(Rev. 02/20/02)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

The claims have been amended as follows:

2. (Amended) The sample support according to claim 39, characterized in that each reaction chamber comprises a bottom face having side [faces] surfaces extending at an angular orientation to the bottom [face] surface, and that said capillary force generating means is realized by a sufficiently small rounding radius in the transition region between said side [faces] surfaces and said bottom [face] surface to cause sample liquid to flow along said transition regions under the effect of capillary forces.

3. (Amended) The sample support according to claim 2, characterized in that, in the transition region between the side [faces] surfaces and the bottom [face] surface of a reaction chamber, the inflow channel is arranged to enter the reaction chamber.

4. (Amended) The sample support according to claim 2, characterized in that, above the bottom [face] surface of a reaction chamber, the inflow channel is arranged to enter the reaction chamber, and that, between the entrance of the inflow channel and the transition region between the bottom [face] surface and the side [faces] surfaces, an inflow groove is arranged, having a cross-sectional area and shape suited to generate a flow of the sample liquid by capillary force.

5. (Amended) The sample support according to claim 4, characterized in that the inflow groove is formed by the rounding radius in the transition region between two adjacent and mutually angled side [faces] surfaces of the reaction chamber.

6. (Amended) The sample support according to any one of claim 2 to 5, characterized in that each sample receiving chamber comprises a bottom [face] surface and side [faces] surfaces arranged in angular relationship thereto, and that each distributor channel is arranged to enter the associated sample receiving chamber in the transition region between the bottom [face] surface and the side [faces] surfaces.

7. (Amended) The sample support according to any one of claim 2 to 5 and 39, characterized in that each sample receiving chamber comprises a bottom [face] surface and side [faces] surfaces arranged in angular relationship thereto, that each distributor channel is arranged to enter the associated sample receiving chamber above the transition region between the bottom [face] surface and the side [faces] surfaces, and that an outflow groove is arranged to extend from said entrance in the direction of the bottom [face] surface, said outflow groove having a cross-sectional area and shape suited to generate a flow of the sample liquid by capillary force.

8. (Amended) The sample support according to claim 7, characterized in that said outflow groove is formed by two mutually angled side [faces] surfaces whose transition region has a rounding radius sufficiently small to generate capillary

forces causing the sample liquid to flow along the transition region.

14. (Amended) The sample support according to claim 12 or 13, characterized in that each of said capillary-force prevention means is provided as a widened portion of a connecting channel or venting opening, which widened portion respectively comprises a side [face] surface with a connecting channel entering thereinto, and that the entrance region of the portion of the connecting channel extending from the reaction chamber is not delimited in the widened portion by any corner regions or only by such a small number of corner regions with rounding radii generating a capillary force that the flow of the sample liquid in the entrance region is prevented.

16. (Amended) The sample support according to claim 15, characterized in that each reagent receiving chamber comprises a bottom [face] surface and side [faces] surfaces extending at an angular orientation thereto, and that the venting collecting channel assigned to a reagent receiving chamber is arranged to enter the reagent receiving chamber above said bottom [face] surface, and that a means for generating a capillary force to cause reagent liquid to flow from the reagent receiving chamber into the venting collecting channel is arranged between said entrance and said bottom [face] surface.

18. (Amended) The sample support according to claim 17, characterized in that said outflow groove is provided as a trough formed in a side [face] surface.

19. (Amended) The sample support according to claim 17, characterized in that said outflow groove is provided as a transition region between two adjacent and mutually angled side [faces] surfaces, the transition region having a rounding radius sufficiently small to generate capillary forces causing a flow of the reagent liquid.

31. (Amended) The sample support according to claim 30, characterized in that each sample liquid receiving chamber comprises a bottom [face] surface and side [faces] surfaces extending at an angular orientation thereto, and that the venting collecting channel assigned to a control liquid receiving chamber is arranged to enter the control liquid receiving chamber above said bottom [face] surface, and that a means for generating a capillary force to cause control liquid to flow from the control liquid receiving chamber into the venting collecting channel is arranged between said entrance and said bottom [face] surface.

33. (Amended) The sample support according to claim 32, characterized in that said outflow groove is provided as a trough formed in a side [face] surface.

39. (Amended) A sample support, comprising

at least one sample receiving chamber for a sample liquid,

a distributor channel for sample liquid, connected to said at least one sample receiving chamber, with at least one such distributor channel extending from each sample receiving chamber,

at least one reaction chamber comprising a cavity which is delimited by [faces] surfaces and is entered by an inflow channel branched off said at least one distributor channel, and

a venting opening for each reaction chamber,

each distributor channel and each inflow channel being dimensioned to have the liquid transport through the distributor and inflow channels effected by capillary forces,

characterized in that, in each reaction chamber, said [faces] surfaces in the entrance region of the inflow channel which are provided for delimiting said cavity, are configured as a means for generating a capillary force causing the sample liquid to flow from the inflow channel into the reaction chamber.